



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,956	06/27/2003	Hidetoshi Tsuzuki	.03560.003316.	4847

5514 7590 06/22/2005

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

VAN, LUAN V

ART UNIT PAPER NUMBER

1753

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,956

Applicant(s)

TSUZUKI ET AL.

Examiner

Luan V. Van

Art Unit

1753

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/1/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Receipt is acknowledged of papers submitted, which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5, 10-11 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Polan.

Regarding claims 1, 11 and 17, Polan teaches plating apparatus (and method) comprising: a plating vessel for holding a plating bath containing at least metal ions (column 4 lines 29-34; an electrolyte solution inherently contains metal ions); a conveying device for conveying a long conductive substrate and immersing the long conductive substrate in the plating bath (figure 1); a facing electrode disposed in the plating bath so as to face one surface of the conductive substrate (figure 1); voltage application means for performing plating on the one surface of the conductive substrate

Art Unit: 1753

by applying a voltage between the conductive substrate and said facing electrode (figure 1, power source 18); and film-deposition suppression means fixedly disposed in said plating vessel so that at least a portion of said film-deposition suppression means is close to shorter-direction edges of the conductive substrate, at least the portion of said film-deposition suppression means close to the shorter-direction edges of the conductive substrate being conductive (column 2 lines 19-28), wherein by holding the conductive portion of said film-deposition suppression means and the conductive substrate at substantially the same potential, and film deposition on the other surface of the conductive substrate is suppressed. Polan teaches that the frame and the article to be plated are both rendered cathodic and are connected to the same negative terminal of a power source; the conductive frame and the conductive article are maintained at the same potential since they are in contact with each other.

Although Polan teaches that the frame assembly comprising of a solid backing plate to treat only one surface of the conductive substrate is preferably formed from a nonconductive material, Polan discloses that a frame formed from an electrically conductive material can be used (column 2 lines 19-28).

Regarding claims 2 and 18, Polan teaches a plating apparatus (and method) to convey the conductive substrate so that a surface of the conductive substrate opposite to the one surface contacts the conductive portion of the film-deposition suppression

Art Unit: 1753

means, said conveying device maintains the conductive substrate and the conductive portion at substantially the same potential (column 2 lines 19-28).

Regarding claims 10 and 16, Polan teaches a plating apparatus wherein said film-deposition suppression means is extended outside of the shorter-direction edge of the conductive substrate (column 6 lines 13-19). The edge shields are extended outside of the conductive substrate.

Regarding claim 5, Polan teaches a plating apparatus wherein the film-deposition suppression means further comprises first members disposed so as to be close to a shorter-direction edge of the conductive substrate, and wherein a plurality of said first members are fixedly disposed along a longitudinal direction of the conductive substrate in a state of being separated from each other (figures 4 and 5-7, members 28).

Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Shang.

Regarding claim 11, Shang teaches a plating apparatus comprising: a plating vessel for holding a plating bath containing at least metal ions (column 1 lines 36-44; a bath of electrolyte inherently contains metal ions), a conveying device for conveying a long conductive substrate and immersing the long conductive substrate in the plating bath (column 1 lines 36-44); a facing electrode disposed in the plating bath so as to face

Art Unit: 1753

one surface of the conductive substrate (figures 1 and 4, anode 12); voltage application means for performing plating on the one surface of the conductive substrate by applying a voltage between the conductive substrate and said facing electrode (figure 2); and a member (figure 4, roller 26) fixedly disposed in portion of said member contacts a said plating vessel so that at least a surface of the conductive substrate opposite to the one surface, at least the portion being conductive (column 3 lines 1-5).

Regarding claim 12, Shang teaches a plating apparatus wherein said member comprises magnets (figures 1 and 3-4, magnets 13) for maintaining contact with the conductive substrate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4, 6-9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Polan.

Regarding claims 4 and 6, Polan teaches that the frame assembly can be mounted in the plating tank in any suitable manner or to a suitable support structure (column 6 lines 39-46). The difference between the reference and the instant claims is that the reference does not teach using foot members to support the film suppression conductive portion.

However, it would have been obvious to one having ordinary skill of the art to modify the plating apparatus of Polan by using foot members, because such members are suitable for supporting the frame assembly as suggested by Polan.

Regarding claim 7, Polan teaches a plating apparatus comprising of multiple transverse members (or first and second members; figures 2, 4-5 and 7-8, member 28) which can be spaced relatively close together (column 6 lines 47-50). The difference between the reference and the instant claims is that the reference does not explicitly teach a second member disposed so as to block a gap between adjacent ones of said first member.

Art Unit: 1753

However, it would have been obvious to one having ordinary skill of the art to modify the plating apparatus of Polan by using a second member (or an additional transverse member) to block a gap between adjacent members, because blocking a gap between adjacent members suppresses plating on one side of the conductive substrate, and because it is a matter of design choice for one having ordinary skill in the art to use multiple transverse members to form a gapless backing member instead of using one solid backing member.

Regarding claims 8-9 and 13, Polan teaches a frame assembly having multiple transverse members (or first and second members) in the longitudinal direction of the conductive substrate. The difference between the reference and the instant claims is that the reference does not explicitly teach that the transverse members is conductive.

However, it would have been obvious to one having ordinary skill of the art to modify the plating apparatus of Polan by making the transverse members--which are a part of the frame assembly--conductive, because Polan discloses that a conductive frame assembly is suitable for plating one surface of the conductive substrate (column 2 lines 19-28).

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Polan in view of Kramer.

Polan teach the apparatus as described above in addressing claims 11 and 13. Polan does not explicitly teach that the second members is disposed over upper surfaces two adjacent ones of first members (claim 14), nor that the second member comprises a projection facing the conductive substrate is a surface of said first members facing the conductive member are disposed on substantially the same plane (claim 15).

Regarding claim 14, Kramer teaches a plurality of first members (figure 9, contact rings 44) are disposed with a gap between adjacent ones of said members and are fixed by supporting members, and wherein each of second members (figure 9, hard backings 64) is disposed over upper surfaces two adjacent ones of said first members. The contact rings and hard backings as taught by Kramer are formed in the longitudinal direction of the conductive substrate to be plated.

Regarding claim 15, Kramer teaches a plating apparatus, wherein a surface of first member facing a surface of the conductive substrate is substantially flat, wherein said second member comprises a projection (figure 9, backings 64 between contact rings 44) for filling the gap, and wherein a surface of said projection facing the conductive substrate is a surface of said first members facing the conductive member are disposed on substantially the same plane (figure 9, contact rings 44 and backings 64 are on the same plane).

It would have been obvious to one having ordinary skill of the art to modify the plating apparatus of Polan by using the plurality of backing members of Kramer, because using the plurality of backing members ensures plating on only one side of the conductive substrate and ensures continuous electrical contact of the conductive substrate with the power source over the entire plating length thereby minimizing variations in the cathode current distribution (column 2 lines 48-54), resulting in more uniform plating.

Claims 3 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Polan in view of either Shang or Nakamura.

Polan teaches the apparatus and method as described above in addressing claims 1 and 17. Polan does not explicitly teach means to contact the conductive substrate by a magnetic force.

Shang teaches a plating apparatus and method wherein the conductive substrate is conveyed while causing the film-deposition suppression means to contact the conductive substrate by a magnetic force (column 2 lines 41-51).

Nakamura also teaches a plating apparatus and method wherein the conductive substrate is conveyed while causing the film-deposition suppression means to contact the conductive substrate by a magnetic force (column 4 lines 28-33).

It would have been obvious to one having ordinary skill of the art to modify the plating apparatus and method of Polan by using magnets to contact the conductive substrate as taught by either Shang or Nakamura, because using a magnetic material in the conveyor assembly facilitates the movement of the conductive substrate and maintains the conductive substrate in a flat manner for uniform plating.

Conclusion

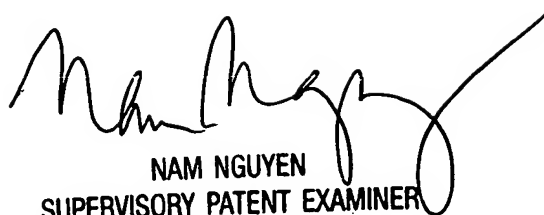
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit: 1753

LW
6/15/05



NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700